



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,383	06/01/2007	Tsutomu Nagaoka	65512 (70801)	1914

21874 7590 06/08/2010
EDWARDS ANGELL PALMER & DODGE LLP
P.O. BOX 55874
BOSTON, MA 02205

EXAMINER

YANG, NELSON C

ART UNIT	PAPER NUMBER
----------	--------------

1641

MAIL DATE	DELIVERY MODE
-----------	---------------

06/08/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/578,383	Applicant(s) NAGAOKA ET AL.	
	Examiner Nelson Yang	Art Unit 1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 10-32 is/are pending in the application.
- 4a) Of the above claim(s) 2, 10-24 and 30-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-7 and 25-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment of claims 1, 7, is acknowledged and has been entered.
2. Applicant's addition of claims 25-32 is acknowledged and has been entered.
3. Applicant's cancellation of claims 8, 9 is acknowledged and has been entered.

Election/Restrictions

4. Newly submitted claims 30-32 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: in particular, claims 30-32 are drawn to a method while the elected claim is directed to a product. Since the inventions do not form a general inventive concept, as the product with the special technical feature of "a film of electroconductive fine particles modified with a probe formed on and/or between electrodes provided on an electrically insulated substrate" is known in the art, as discussed below, the claims lack unity of invention.
5. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 30-32 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.
6. Claims 1, 3-7, 25-29 are currently pending and under examination.
7. Claims 2, 10-24, 30-32 are withdrawn.
8. Claims 8 and 9 are cancelled.

Priority

9. Application 10/578,383 is a national stage application of PCT/JP04/06583, filed May 10, 2004, which claims foreign priority to JP 2002-378602, filed November, 7, 2003.

Claim Objections

10. Claims 2, 10-24 are objected to because of the following informalities: the listing of the withdrawn claims do not include any text. It is unclear if this intentional, in that the claims are amended to not include any text, or if this was unintentional. Appropriate correction is required.

Claim Rejections - 35 USC § 112

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 25-29 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

13. The term "fine" in claim 25 is a relative term which renders the claim indefinite. The term "fine" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In particular, it is unclear what range of dimensions would be necessary for a recess to be considered fine, thus rendering the scope of the limitation unclear. For the purposes of examination, the term "fine recesses" has been interpreted to refer to any recess.

Art Unit: 1641

14. The remaining claims are indefinite due to their dependence on an indefinite claim.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 1, 3-5, 7, 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan et al. [US 2002/0090649] in view of Yamashita [US 2004/0018548].

In particular, with respect to claims 1, 4, 5, 7, Chan et al. teach a sensor comprising an insulating layer with a set of input and output electrodes interdigitated at test sites, a plurality of linker moieties in contact with either the input electrodes, output electrodes or both, with probes such as nucleic acids immobilized to the linker moieties (para. 0013-0017, 0081), wherein the probes may be indirectly attached using a functional group such as thiol groups (para. 0085). Chan et al. fail to teach that the linker moieties are electroconductive fine particles, or that they form a film.

Yamashita et al., however, teach a sensor comprising a first and second electrodes on a substrate with a film made of gold particles placed on the electrodes, wherein the particulate film is modified with probes such as thiol DNAs that bind to the gold particles via the thiol end (para. 0023, 0133-0147, fig. 7a, 8a). Yamashita et al. further teach that this allows for uniform quality particulate films with high reproducibility, so that the density of the nucleic acid probes is uniform (para. 0026-0029).

Art Unit: 1641

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention for the linker moieties of Chan et al. to be gold particulates, as suggested by Yamashita et al., such that the attachment of the thiol DNA probes of Chan et al. could be performed at a high density in a uniform manner.

17. With respect to claim 3, Yamashita et al. teach that the polymer film comprises a binder (para. 0082—088).

18. With respect to claims 25-26, Chan et al. teach a plurality of recesses such as individual microtiter wells, wherein the first electrode is located on the surface of the substrate, and the second electrode are located on the inner surface of the recesses (fig. 9A-C, para. 0034). As discussed above, Chan et al. teach a sensor comprising an insulating layer with a set of input and output electrodes interdigitated at test sites, a plurality of linker moieties in contact with either the input electrodes, output electrodes or both, with probes such as nucleic acids immobilized to the linker moieties (para. 0013-0017, 0081), wherein the probes may be indirectly attached using an functional group such as thiol groups (para. 0085), while Yamshita et al. teach that the linker moieties may be particulate films.

19. With respect to claims 27, 28, Chan et al. teach that the electrodes may form rows and columns of electrodes that share interconnects or leads (para. 0033, 0064)

20. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chan et al. [US 2002/0090649] in view of Yamashita [US 2004/0018548], as applied to claim 1 above, and further in view of Vossmeier et al. [US 2002/0132361].

Art Unit: 1641

With respect to claim 6, Yamashita teaches attaching gold particle films to an electrode surface using a binder, as discussed above, but fail to teach using thiol groups such as 1,10-decanedithiols.

Vossmeier et al., however, teach a nanoparticle film comprising a nanoparticle network modified by probes and interlinked by dithiol groups such as dodecylthiol and 1,9, nonanedithiol molecules and further teaches that this allows for interlinking of nanoparticles allowing the film to be made very thin with high precision (para. 0016, 0089, 149, 150). Primel et al. further establishes that 1,9, nonanedithiols and 1,10-decanedithiol are equivalent dithiols known in the art. Therefore, one of ordinary skill in the art at the time of the invention would have found it obvious to utilize 1,10-decanedithiols in the films of Yamashita in order to produce films that can be very thin and made with high precision.

21. Claim 29 rejected under 35 U.S.C. 103(a) as being unpatentable over Chan et al. [US 2002/0090649] in view of Yamashita [US 2004/0018548], as applied to claim 25 above, and further in view of Coassin et al. [US 6,229,603].

With respect to claim 29, Chan et al. and Yamashita teach the invention as discussed above, specifically recesses such as microtiter wells, but fail to teach that the microtiter wells are conical.

Coassin et al., however, teach that wells can be made with conical walls with flat or round bottoms, shear vertical walls with flat or round bottoms (column 6, lines 38-57).

Therefore, since Chan et al. and Yamashita taught the claimed invention except for limitation that the wells were in the form of a cone, and since it was well known to one of

Art Unit: 1641

ordinary skill in the art at the time of the invention that wells with shear walls and conical walls were well known and had equivalent functions, the substitution of the wells of Chan et al. with the conical wells of Coassin et al. by one of ordinary skill in the art would have yielded predictable results.

Response to Arguments

22. Applicant's arguments with respect to claims 1, 3-7, 25-32 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

23. No claims are allowed.

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 1641

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson Yang whose telephone number is (571)272-0826. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya can be reached on (571)272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

26. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nelson Yang/
Primary Examiner, Art Unit 1641